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EUROPEAN PATENT APPLICATION

(43) Date of publication:
09.10.2002 Bulletin 2002/41

(51) Int Cl.7: G01F 1/66

(21) Application number: 01131054.7

(22) Date of filing: 31.12.2001

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: Ohnishi, Kazumasa
Nagaoka-shi, Niigata 940-0846 (JP)

(74) Representative: Banzer, Hans-Jörg, Dipl.-Ing.
Kraus & Weisert
Patent- und Rechtsanwälte
Thomas-Wimmer-Ring 15
80539 München (DE)

(30) Priority: 02.04.2001 JP 2001137887
29.11.2001 JP 2001364923

(71) Applicant: Ohnishi, Kazumasa
Nagaoka-shi, Niigata 940-0846 (JP)

(54) Clamp-on ultrasonic flowmeter

(57) A clamp-on ultrasonic flowmeter has a pair of ultrasonic transmitting-receiving devices which are placed on a pipe in which a liquid flows. Each device is composed of a composite of a ultrasonic transducer and a ultrasonic propagating element which propagates ultrasonic wave transmitted by the transducer predominantly in the direction perpendicular to a plane of the transducer (which is arranged at an acute angle from the center line of the pipe), and a ultrasonic propagating

layer placed between the ultrasonic propagating element and the pipe. The ultrasonic propagating layer has a viscosity of 0.5×10^{-3} to 3×10 Pa·sec at 25°C and a rate of sonic propagation in terms of V_1 at 25°C satisfying the condition of $0.5 < V_1/V_2 < 1.7$ in which V_2 represents a rate of sonic propagation of material of the pipe at 25°C. Otherwise, the ultrasonic propagating layer has a rate of penetration of needle in the range of 10 to 300 at 25°C and a rate of sonic propagation satisfying the same condition.

FIG. 1

